DEPARTMENT OF ENVIRONMENTAL STEWARDSHIP/

NEW BEDFORD CONSERVATION COMMISSION

CITY OF NEW BEDFORD
JON T N F. MITC E , M YOR

August 14, 2017

Ms Angela Gallagher
Mr. Gerard Martin
Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup
20 Riverside Drive
Lakeville, MA 02347

Dear Angela and Gerard:

Thank you for the opportunity to comment on the revised Phase III Remedial Action Plan for RTN 4-0601. Jim Okun has also reviewed the revised Phase III report and has provided the city comments which are attached hereto.

The City appreciates AVX's consideration of, and willingness to address, our previous concerns regarding the removal of impacted soil adjacent to the Acushnet River shoreline. Proposed excavation of soil within 25' of the sheet pile wall down to the peat layer will remove over 26 tons of the residual PCB mass from the 25-foot buffer of the Acushnet River. Additional excavation down to bedrock in the northeast corner of the site will increase that mass to nearly 46 tons: totaling 53% of the residual PCB contaminant mass on the property. This remedial element is protective of the river and addresses a rising sea level that we have already witnessed on site.

While we also appreciate AVX's evaluation of on-site consolidation as a potential element of the ultimate remedial alternative, we have substantial reservations about leaving *all 90+ tons of the Site's PCB mass* (within over ½ million tons of impacted soil) on site in this active densely-populated residential environmental justice community.

The Phase III reports that the difference in cost between off-site disposal and on-site consolidation of the 7,600 cubic yards proposed to be excavated from the 25-foot shoreline buffer on OU3 is $11.3M. While the City certainly understands the significance of this incremental cost to remove this material, we believe this difference would be substantially offset by the benefit of the complete removal of over 50% of the contaminant mass from the site. We believe the community would also see this benefit as valuable and appropriate.

The City is mindful of Titleist's rejection AUL on their property, which will require the off-property disposal of 9,700 cubic yards of impacted soil. AVX has proposed to consolidate this soil from OU1 on the OU3 area rather than transport and dispose at a licensed facility, at a cost savings of $8.1M. This alternative would more than double the proposed consolidation area, bringing it to nearly two acres.

The City recognizes that the Cooperative Agreement between New Bedford and AXV projected a cap/engineered barrier, along with an AUL, as the ultimate remedy for the site. However, the City respectfully notes that since the 2010 Cooperative Agreement, additional assessment has refined the magnitude of impact (86 tons of residual PCBs on OU3), the comingling of contaminants (thereby changing the relative mobility and solubility of PCBs), which together have significantly altered the original conceptual site model. The Cooperative Agreement also did not suggest that any additional impacted material would be brought onto the former Aerovox property as part of the remedial solution.

The City has reservations about remedial alternatives OU3-9 and OU1-3B. Not only do these alternatives not remove any contaminant mass from the site, but together they *actually increase* the mass of PCBs on OU3. While we remain open to on-site consolidation including some of the material excavated from OU1, we suggest that the most impacted material be disposed off-site at a volume sufficient to bring the average concentration in the proposed consolidation area below UCLs. We believe that this is a more appropriate and sustainable approach given the proximity of the site to nearby residential neighborhoods.

The City appreciates the opportunity to offer comment on the proposed remedial alternative. This continued dialogue is essential to finalize a remedial approach that will realize a sustainable Permanent Solution. We would be happy to meet for a more in-depth discussion at your convenience. As always, please call me with any comments or questions.

Sincerely,

Michele S.W. Paul, LSP
Director of Resilience and Environmental Stewardship

cc: David Lederer - EPA
David Dickerson - EPA
Marilyn Wade, LSP
Evan Slavitt, Esq.
Mary K. Ryan, Esq.
Gary Gill-Austern, Esq.
Mikaela A. McDermott, Esq.
Jane Medeiros Friedman, Esq.
Jim Okun, LSP

O'Reilly, Talbot & Okun
ENGINEERING ASSOCIATES

August 9, 2017
File No. 5185-01-01

Ms. Michele Paul
Director of Environmental Stewardship
City of New Bedford
133 William Street - Room 304
New Bedford, MA 02740

Subject: Comments on AVX Draft Phase III Report (6/11/2017)
Former Aerovox Facility
New Bedford, MA

Dear Michele:

As requested, I have prepared these comments regarding the Draf t MCP Phase III Report recently provided by AVX. In reviewing the report from a big picture perspective, I asked myself these two questions:

1. Does the report meet the MCP's technical requirements for a Phase III Remedial Action Plan? And
2. Will the recommended remediation adequately reduce Site risks for the reasonably foreseeable future? – In other words, are the propos ed remedial actions sustainable over the long-term?

To provide some context for my comments, I have included brief discussions of general MCP remedial objectives and some of the Site-specific c onsiderations that influence the identification, consideration and selection of re medial alternatives. I have likely oversimplified some technical findings in the inter est of better illustrating their effect on remedy selection.

A. REMEDIAL OBJECTIVES

The MCP identifies regulatory objectives for the remediation, b ut in practical, site specific terms there are three central remedial objectives:

1. Eliminating risk of harm to human health from COCs at the Site;
2. Addressing COCs that have migrated to other properties adjac ent to the former Aerovox property; and
3. Controlling the migration of COCs to the Acushnet River estu ary so as not to impair EPA's remediation of the estuary.

The issue of remedial sustainability takes on particular signif icance because the greatest mass and concentration of Site COCs are located adjace nt to the riverbank. A further level of complexity arises from consideration of how climate change may affect this ecologically vulnerable location within the foreseeable future.

B. SITE-SPECIFIC CONSIDERATIONS

Before discussing remedial alternative identification, evaluation and selection process, it makes sense to consider some of the defining characteristics regarding of the Site and its contaminants of concern (COCs).

First, it is important to realize that the Conceptual Site Model (CSM) for the site has changed is some significant ways based on the findings of the Phase II and Phase III investigations. Specifically:

- The mass of PCBs present in Site media is now known to be much greater than previously estimated. Much of this increased mass is located within 25 feet of the bank of the Acushnet River estuary.
- The mobility of PCBs at the Site is greater than previously estimated due to the presence of trichloroethylene (TCE) in Site media. TCE solubilizes PCBs making them more able to move between different Site media.
- It appears that PCBs and TCE may still be migrating into the estuary through deep overburden and bedrock. Complete elimination of these migration pathways may be technically infeasible. As a result, the in-situ stabilization of hazardous materials located immediately adjacent to the estuary may not be a sustainable solution.

Site Characteristics

The Site has a combination of geographic and geologic characteristics that make remediation particularly challenging. These characteristics include:

- The Site is located largely on fill material adjacent to the bank of the Acushnet River estuary.
- As described in the Phase II and Phase III reports, the links between the Site and the estuary exists at several levels, each of which provides a potential migration pathway for Site COCs.
- Links between the Site and the estuary exist at four levels: 1) surficial; 2) shallow soil overburden; 3) deep soil overburden; and 4) bedrock.
- The deeper the potential pathway the more technically challenging it is likely to be to control.

COC Characteristics

Although numerous COCs are present at the Site, the dominant ones are PCBs and trichloroethylene (TCE). Due to the chemical similarities among the COCs and their general colocation at the Site, several of the remedial technologies capable of successfully addressing PCBs and TCE will likely also address the other COCs.

- PCBs are usually described as chemically stable, relatively non-volatile and almost insoluble in water. PCBs tend to bind tightly to soil and sediment in

the environment. However, if oil or solvents are also present they can increase the mobility of PCBs because PCBs are quite soluble in these non-polar materials. At the Site, the TCE and some other COCs have made the PCBs more mobile.

- This enhanced mobility allows PCBs to move into deeper Site strata and create complex migration pathways by which they may enter the estuary.
- TCE is a chlorinated organic solvent that, like PCBs, is almost insoluble in water. With a boiling point somewhat less than that of water, TCE is classified as a volatile organic compound (VOCs). TCE has a density greater than that of water and when released to the environment TCE moves freely into soil, although unlike PCBs it does not bind tightly to soil/sediment. In situations where TCE reaches groundwater it can form a dense non-aqueous phase liquid (DNAPL).
- At the Site it is believed that the TCE in the ground solubilized PCBs and other COCs, migrated with them to the water table and then formed DNAPL. This DNAPL continued to migrate through fractures into the Site bedrock.

C. THE OPERABLE UNITS AND SELECTED REMEDIAL ACTIONS

In keeping with USEPA Superfund methodology, the Phase III report identified four Operable Units (OUs) at the Site, each of which requires the identification, evaluation and selection of its own remedial alternatives. The OUs are:

- OU1 – Impacted Shallow Uncapped Soil
- OU2 – Vapor Intrusion Impacts
- OU3 – Source Area Overburden Groundwater and Soil
- OU4 – Site Wide Bedrock

A review of the OUs and the proposed remedial alternatives is presented in the flowing paragraphs.

OU1 – Impacted Shallow Uncapped Soil

OU1 consists of surface soils above the peat layer within the eastern landscaped area of the Acushnet/Titleist property. These soils were likely impacted by contaminated Site storm water runoff during flood events. This OU concerns soil currently located in areas adjacent to the former Aerovox property on the property of other landowners.

The recommended alternative for OU1 was OU1-3B which was described as:

- Excavation and removal of soil from the Titleist property which have PCB concentrations greater than 1 mg/kg with stabilization and/or solidification as necessary;
- Transportation and consolidation of PCB-impacted soils beneath an engineered barrier on the former Aerovox property;

- Backfilling excavation areas with imported clean backfill; and
- Restoring the ground surface in kind.

This alternative includes the excavation and relocation of appr oximately 9,700 cubic yards of PCB-impacted soil.

OU2 – Vapor Intrusion Impacts

OU2 includes the potential for vapor intrusion occurring at the Precix property due to VOCs that originated at the Site. The combination of: 1) VOCs in groundwater at concentrations greater than Method 1 GW-2 MCP criteria; 2) sub-slab soil gas above screening values; and 3) indoor air concentrations of VOCs at Precix, suggest vapor intrusion is occurring.

Based on the conclusion that the level of vapor migration was n ot causing risk of harm to health or the environment, the selected remedial action for OU3 was monitored natural attenuation.

OU3 – Source Area Overburden Groundwater and Soil

OU3 is the source control OU, and it includes the Aerovox Prope rty soils, storm sewers, and overburden groundwater. The Phase II report confirmed the presence of PCBs in soil across the Property. Shallow soils along the river front and deeper soils in the northeast corner of the Property exhibited PCB concentra tions above UCLs. Other COCs (including TCE) are present from three feet down to bedrock.

The Phase III report recommended remedial alternative OU3-9 for this operable unit. The major components of alternative OU3-9 are:

- Excavation and on-site consolidation of soil within 25 feet o f the shoreline to the top of the peat layer. Within the northeast corner excavat ion would continue to the top of bedrock with stabilization/ solidification as necessary;
- Backfilling excavated areas with clean fill;
- Installation of engineered barrier where soil PCB concentrati ons are greater than the UCL in the upper 15 feet;
- Repairing the asphalt cap as needed;
- Placing an AUL on impacted areas that limit future uses of th e Site that may result in significant risk;
- Installing a vertical engineered barrier on the downgradient side of the property, and vertical containment barriers on the northern and southern sides;
- Conducting in situ treatment of hot spot soils;
- Monitoring and maintenance of the engineered barrier; pavement, cap; and
- Providing long-term monitoring of groundwater.

This alternative includes excavation of approximately 7,600 cub ic yards of CVOC and PCB-impacted soils to the top of the peat layer within 25 f eet of the riverbank,

and to the bedrock surface in the northeast corner of OU3. The estimated soil volume and the cost estimate assumes the soil contains PCBs at concentrations greater than 100 mg/kg.

Soils removed from adjacent to the riverbank would be relocated on-site to a specially constructed cell located outside of the 100-foot wate rfront buffer zone. The cell design would provide protection from storms and flooding and will be located in a part of the Site where soils already contain PCBs at or greater than 100 mg/kg. Implementation of OU3-9 take approximately four to five months.

An engineered barrier would be constructed downgradient of the remaining soils with PCB concentrations greater than 100 mg/kg (including the consol idation cell), and the existing asphalt cap would be repaired. Following excavations along the riverbank, the bank restoration will provide greater resiliency to storms and flooding.

Alternative OU3-9 also includes installation of low permeabilit y vertical barrier walls on the northern and southern sides of the impacted area. A reac tive barrier wall (the "PRB") will be installed 25 feet from the riverbank down to the top of bedrock to treat groundwater along the downgradient side of the property. The g oal of the PRB is to limit the migration of VOCs and PCBs. Alternative OU3-9 could theoretically achieve an MCP Permanent Solution at some point in the future.

OU4 – Site Wide Bedrock

OU4 is concerned with bedrock groundwater that contaminated with VOCs and PCBs. Shallow bedrock groundwater contains PCBs and TCE at concentrations greater than MCP the Method 1 GW-3 standards and in the northeast corner of the UCLs are exceeded. At some locations, bedrock deeper than 50 feet exceed GW-3 standards for TCE and the UCL for TCE is exceeded in some deep bedrock sample locations as deep as 185 feet. TCE and PCBs were present dissolved in groundwater and also as DNAPL.

Alternative OU4-1 was selected to address bedrock groundwater. OU4-1 includes the in-situ chemical oxidation (ISCO) of "hot spot" groundwater concentrations and DNAPL. These hot spots include TCE and PCBs in the shallow bed rock (30 to 46 feet deep), TCE in the deep bedrock (53 to 198 feet deep), and TCE in the shallow to deep bedrock (48 to 89 feet deep). The locations where this remediation is proposed are shown on Figure 4.3.4-1 of the Phase III report.

The goal of the ISCO treatment is to reduce groundwater concentrations to less than UCLs (less than 50,000 ug/l for TCE and less than 10 ug/l for PCBs) and to thus eliminate Significant Risk of harm to public welfare and the environment. Monitored Natural Attenuation (MNA) would be used to monitor the effectiveness of the treatment.

D. COMMENTS ON THE PROPOSED ACTIONS

Based on our review of the Phase III report we offer the following comments:

OU1 – Impacted Shallow Uncapped Soil

1. This operable unit addresses impacted soil not on the Aerovox property.
2. As you know, early conversations with AVX did not anticipate the relocation of soil from neighboring properties onto the Aerovox property. However, OU1-3B calls for the relocation of 9,700 cubic yards of affected soil onto the Aerovox property.
3. Combined, the proposed remedial actions for OU1 and OU3 would result in the addition of almost 20,000 cubic yards of contaminated soil to the more upland portions of the Aerovox property. This is a significant amount of soil and the alternatives would be easier to evaluate if a proposed grading plan were available with storm water management features were included with the Phase III remedial action plan.
4. Given the challenges of relocating 20,000 cubic yards of contaminated soil, we recommend reevaluating an alternative that includes the most contaminated soil being disposed of off Site. This would reduce residual contaminant mass remaining after closure and result in less soil to manage on-Site.
5. The contaminants in this soil: a) likely originated from the Aerovox property; b) are the same contaminants as are already present at the Aerovox property; and c) are likely to be tightly bound to soil. It is our opinion that relocating the soils to the Aerovox property may not increase the risk of harm posed by the Site and that the relocation is likely consistent with practices considered acceptable under the MCP.
6. With the noted reservations, it is our opinion that the proposed remedy is conceptually consistent with the MCP. If implemented successfully the remedy is likely to result in a reduction of the Site's risk of harm.

OU2 – Vapor Intrusion Impacts

1. This operable unit addresses the potential for vapor intrusi on at buildings adjacent to the Site.
2. Based on our review of the information in the Phase II and P hase III reports, it is our opinion the proposal for monitored natural attenuatio n is reasonable, protective of public health and the environment and consistent with the MCP.

OU3 – Source Area Overburden Groundwater and Soil

1. AVX's proposal for OU3 (OU3-9) is centered on the relocation of soil currently within 25 feet of the riverbank to an engineered secure cell to be constructed on higher ground at the Site. The level of effort required to complete the OU3 remediation is greater than had been anticipated because the Ph ase II and III reports identified higher concentrations and a greater mass of contaminants in this zone than had previously been known. The investigation s also found that the contaminants were more mobile than had previously been known.
2. We agree that removing these contaminated soils from adjacent to the riverbank is vitally important to the success of the remediatio n. However, in our opinion it would be worth reconsidering the alternative of relocating the most highly contaminated soil to a secure off-site facility in lieu of relocation on-site.
3. The combined OU1-3b remediation (9,600 cubic yards) and OU3-9 remediation (7,600 cubic yards) will result in relocating almos t 20,000 cubic yards of soil to a secure cell on Site. This is will result in a significant change to the grades and storm water management at the Site. To evalu ate this proposed modification it would be helpful to have a proposed gr ading plan with storm water management features noted. Twenty thousand ya rds is a great deal of soil to manage on the Site, and the prospect of d oing so is another good reason to reconsider moving the soil with highest concentrations to an off-site facility.
4. With the reservations expressed above, it is my opinion that the proposed action may be consistent with the MCP, but it would not result in an adequate reduction of the Site's risk of harm over the foreseeable future.

OU4 – Site Wide Bedrock

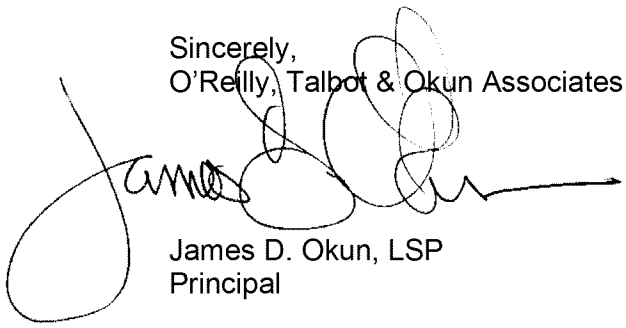
1. This operable unit is concerned with the remediation of bedr ock groundwater, a technically challenging goal. We agree with AVX's proposal t o use a chemical oxidation technology to address contaminants in-situ.
2. In our opinion, it is unlikely that the mass of PCBs in bedr ock will be reduced by chemical oxidation because PCBs are generally highly resistant to chemical oxidation. However, it is more likely the mass of bed rock TCE will be reduced because TCE is more chemically reactive than are PCBs.
3. It is possible, but by no means assured, that the mobility o f the PCBs will be reduced as a result of the TCE concentrations declining. With less TCE

present to enhance the PCB's solubility, their potential to migrate may decline.

4. Follow-up monitoring may suggest that repetition of the chem ical oxidation process needs occur to achieve lasting benefits.
5. It is our opinion that the proposed remedy is consistent wit h the MCP. To answer the question of whether it will reduce risk of harm will require a successful field demonstration. There are too many unknown var iables to permit an answer to that question now.

Please let me know if you have any questions. Thanks.

Sincerely,
O'Reilly, Talbot & Okun Associates, Inc.



James D. Okun, LSP
Principal